REMARKS

Claims 1-58, all the claims pending in the application, stand rejected. Claims 1, 12, 44 and 52 are amended. No claims are cancelled.

Claim Rejections - 35 U.S.C. § 102

Claims 1, 6-8, 11, 12, 19, 27, 31, 33, 35, 36 and 39 are rejected under 35 U.S.C. § 102 as being anticipated by Satake et al (5,487,472). This rejection is traversed for at least the following reasons.

First, the Applicants distinguished Satake et al in the present application at page 2, where Applicants explained that the Satake et al device uses reflected light having multiple wavelengths specially chosen to highlight damage to the outer surface of a plant product. The use of a spectrum or multiple wavelengths adds greatly to the cost, size, and complexity of the Satake et al inspection system and also increases the chances of an acceptable blossom, stem, or natural blemish on the plant product causing a false positive damage scan and resultant waste of good plant products. Additionally, Satake et al device does not provide a thorough inspection of substantially the entire surface of the plant product because the plant product passes through the inspection system while lying on a conveyor belt, so the belt blocks part of the plant product from view. Further, as is clear from the abstract in Satake et al, as well as the disclosure at col. 4, the sorter requires a detection of both (1) transmitted and (2) reflected light.

Specifically, a first detector 20, which uses a broadband halogen light source 21, provides first and second detection signals (S1, S2) according to dispersed and transmitted light having two different wavelengths (700 nm and 1,100 nm), as taught at col. 4, line 57-col. 5, line 19).

The broadband light is divided by a half mirror 25 into two light beams, which are then filtered by filters 26, 28 and detected by sensors 27, 29 and produce signals S1, S2, respectively..

A second detector 30 at a different location with respect to the first detector 20 provides a third signal according to a reflected light, as explained at col. 5, lines 30-61. The detector 30 also uses a halogen lamp 31, a reference color cylinder 32, detection cylinder 33 in three sets. The light from the halogen lamp does not have a specific frequency, but is broad band. Also, the reference color cylinder 32 has two lamps 34a, 34b and filters 35a, 35b. The detection cylinder has optical means, including a half mirror that divides and directs a reflected light beam towards a red filter 39 and a sensor 40 to produce a signal S3, and a green filter 41 and a sensor 42 for producing signal S4.

A comparator in the form of a controller 50 processes the detection signals S1 and S2 from detector 20 and the signals S3 and S4 from detector 30 in providing the sorting control function, as explained at col. 5, line 65 to col. 6, line 49. At a minimum, all of signals S1-S4, involving transmitted and reflected light, are needed for this function.

In framing the rejection at page 2 of the Office Action, the Examiner points to the structure in Satake et al that relates to dispersed and transmitted light, rather than reflected light. Thus, the analysis is erroneous since the Examiner has not compared the claimed structure to the reflected light detectors 30. Clearly, the structure related to the reflected light does not have the claimed detection of substantially a single wavelength of a reflected light produced by the plant product responsive to the illumination light. Moreover, it does not perform such detection, even as to the transmitted and dispersed light, "without detecting light at other wavelengths," as now

claimed in each of independent claims 1 and 12. Thus, the rejection of these claims and the claims that depend therefrom would be novel over the Satake et al reference.

Claim Rejections - 35 U.S.C. § 103

Claims 2, 13, 21-26, 28 and 43 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Satake et al (5,487,472). This rejection is traversed for at least the following reasons.

First, the claims would be patentable for the reasons given with respect to parent independent claims 1 and 12, as the Examiner continues to refer to the light sources for transmitted or dispersed light, rather than reflected light. Also, the Examiner fails to acknowledge that any detection in Satake et al requires both transmitted/dispersed light S1, S2 and reflected light signals S3, S4. Thus, there is no teaching that only reflected light can be used for defect detection purposes, particularly, reflected light at a single frequency.

Applicant notes that the Examiner acknowledges that a single broad band light source 21 is used by Satake et al and asserts that such light source can be used to provide different wavelengths at 700 nm and 1100 nm. As already asserted, this is for transmitted and dispersed light and not reflected light. Applicant also notes that the adaptation of a broad band halogen light sources 31 and separate adjustable lamps 34a and 34b in the second detector 30 of Satake et al such that only a single wavelength source is used, would rely solely on hindsight based on Applicants' own teachings. First, there is no teaching or suggestion as to the frequency of the light, nor a teaching or suggestion that only one frequency would be used. Even as to the use of

two different light sources, there is no teaching or suggestion that two sources at different locations for detecting reflected light would be used. At best, Satake et al teaches multiple wavelengths at multiple locations, but does not teach two different locations that use reflected light. Accordingly, at least based on the clarifications made to the parent claims 1 and 12, and the Examiner's misinterpretation of Satake et al, this rejection should be overcome.

Claims 1-58 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Campbell et al (5,791,497). With respect to claims 13, 17, 22, 34, 40, 42 and 43, the combination of Campbell et al and Conway (5,164,795) is relied upon. With respect to claims 10, 15, 20, 51 and 58, the combination of Campbell and Aranda Lopez et al (4,221,297) is relied upon. These rejections are traversed for at least the following reasons.

The Examiner looks to Campbell et al for a teaching of a method and system that illuminates a plant product (cranberries) with light at a particular wavelength or wavelength range and detects reflected light to assess damage, such as rot, and sort the plant product. The Examiner looks to the text at cols. 1, 4, 6 and 9 for support, particularly for a teaching at col. 9, lines 43-45 of a laser at 904 nm. The Examiner concludes that these teachings in Campbell et al support a structure that detects substantially a single wavelength, as claimed. Indeed, Campbell is relied upon for a teaching of all of the claimed subject matter except for the use of a second inspection station, as in Conway et al, and

Campbell et al teaches the illumination of a plant product with light from a first light source "in a wavelength range" where the range is selected to be in the near infrared region of 700nm-1100nm. The light is preferably a lamp 36 of the rare gas discharge type, as explained at col. 5, lines 13-24, and for cranberries can be an argon lamp having a range with spikes at 810

and 910 nm, as explained at col. 6, lines 21-54. The reflected light is detected by a camera 22 and processed by a processor 26 in determining the presence of defects. Differences in reflectivity for good and bad cranberries when light in the near infrared spectrum is shone on the plants will permit sorting of the products. The patent also mentions that other lamps or GaAs lasers that produce high-intensity emissions at about 904nm can be used and can be tuned to produce other wavelengths.

Clearly, with respect to the gas discharge lamps in Campbell et al, light having a broad spectrum of wavelengths is used and a single wavelength is not detected. Indeed, at the least, two wavelengths would be detected, on the basis of the major spikes disclosed at col. 6, lines 37-44. Given the amendment to the claims 1, 12, 44 and 52 to emphasize that only a single wavelength is detected, the disclosed and claimed invention would be patentable over Campbell et al taken alone. Even as to the mention of a GaAs laser having emissions at about 904 nm, the text at col. 9, lines 38-52 suggests that other wavelengths would be used as well. Moreover, nothing suggests that only a single wavelength would be detected. Thus, given the amendment to claims 1, 12, 44 and 53 to emphasize this feature, the claims clearly would be patentable.

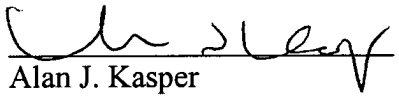
As to the teachings of Conway et al and Aranda Lopez et al, these references are cited merely for the use of second detection stations or rotation structures that will ensure a plant product is inspected on all sides. These references do not teach or suggest the detection of only a single wavelength with no other wavelengths being detected, as now claimed.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Alan J. Kasper
Registration No. 25,426

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
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